



United States Department of the Interior

GEOLOGICAL SURVEY

Conservation Division
P. O. Box 26124
Albuquerque, New Mexico 87125

June 14, 1979

Memorandum

To: Files

From: Mining Engineer, SRMA

Subject: Todilto Exploration and Development Corporation's
Haystack Mine-Underground Operations, Section 13,
T. 13 N., R. 11 W., McKinley County, New Mexico

June 13, 1979, the writer examined the subject mining operations in the company of Mr. Dale Palmer of Todilto Exploration and Development Corporation (TEDCO). The purpose of the examination was to acquaint the writer with the mining methods used in the operations. TEDCO's courtesy and cooperation in allowing this examination is gratefully acknowledged.

The Haystack Mine is located in Section 13, T. 13 N., R. 11 W. and Section 19, T. 13 N., R. 10 W., McKinley County, New Mexico, about 15 miles northwest of Grants. This locale is at the base of Haystack Mountain, the site of the first uranium discovery in the Grants Uranium Belt by Paddy Martinez in 1950. The mineral rights in Section 13 belong to the Department of Energy (DOE), and TEDCO has conducted both open-pit and underground uranium mining in this property under a DOE mineral lease. The surface rights in Section 13 belong to the Navajo Tribe. The surface and mineral rights in Section 19 belong to the Santa Fe Pacific Railroad Company (SFP), and TEDCO has open-pit mined in this tract under a SFP mineral lease. At the present time, only the underground operations in Section 13 are active.

TEDCO also holds Navajo Allotted Uranium Lease N00-C-14-20-5681 which covers N/2 N/2, Section 13, T. 13 N., R. 11 W. This lease is on the north side of Haystack Mountain, and TEDCO has performed extensive exploration within the property. Since 1975, TEDCO has attempted to acquire a similar lease for a Navajo Indian



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allotment in the SW/4, Section 18, T. 13 N, R. 10 W. This tract is the site of the abandoned Federal or Mesa No. 2 Mine which was active in the 1950's and 1960's and TEDCO's active underground workings about the allotment on the west boundary. Permission to negotiate a mineral lease with the allottee has been requested from the BIA but has not yet been granted.

The uranium host in the Haystack Mine is the Jurassic Todilto Limestone of the San Rafael Group. This strata is 25 to 35 feet thick, and the small ore deposits are clustered in the middle and lower portions of the host. The ore is generally thin (1 to 3 feet average) and of low grade (about 0.10% U_3O_8), and extraction is therefore accomplished by split-shooting which is essentially hand-sorting of the ore.

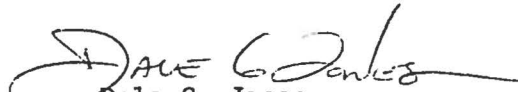
The Haystack ore is mined by modified room-and-pillar stoping with ore level haulage. Operations are conducted two 8-hour shifts per day, 5 days per week. Each shift consists of two miners, one LHD operator, two truck drivers, and one utility miner. Diesel powered equipment consists of Wagner 2-cubic yard LHD's and Elmac 4- to 5-cubic yard trucks. The Elmac trucks are manufactured in Carlsbad, New Mexico. Standard pneumatic jackleg drills are used for drilling and one slusher mounted in the bucket of an LHD is used for mucking in pillar recovery. Weekly production averages about 1000 tons of ore at 0.10 - 0.12% U_3O_8 . The cutoff grade is about 0.05% U_3O_8 depending on various conditions. Mr. Palmer noted that the mine has the highest production per manhour of any mine in New Mexico.

Pillar development and prospecting drifts are driven with the ore zone in the upper portion of the drift cross-section. At a clean face, the entire drift round is drilled, and a geologist then probes all of the holes and marks the ore with paint on the face. The lower portion of the round, which is waste, is then blasted and mucked. The upper portion of the round, the ore, is then blasted and hauled to the surface. This sequence is called split-shooting, and it permits very close grade control and minimum dilution.

Pillar development results in pillars measuring 20 feet by 50 feet. As in the drifts, the ore is located in the upper portion of the pillars, and recovery is accomplished by a somewhat different split-shooting procedure. First, a 6-foot round is drilled in the ore for the entire pillar length. This round is blasted, and the slusher mounted in the LHD bucket is used to move any remaining muck into the crosscut. This raises the crosscut floor from which the next 6-foot round in the pillar is drilled. Stulls are used as necessary for ground support between the back and pillar top. The second 6-foot round is blasted and all the ore is then mucked and hauled to the surface. Two pillars are worked from each crosscut,

and the final 6- to 8-feet of ore in each pillar is recovered when working the next crosscut. None of the waste in the pillars is removed. Stubs are left at the ends of pillars in some areas to maintain access but are recovered if possible when making the final retreat from the stope.

The writer and Mr. Palmer also examined the easternmost mine workings which are immediately adjacent to the Navajo Indian allotment in Section 18, T. 13 N., R. 10 W. In this area of the mine, shale has created bad ground conditions, and the back cannot be supported with rock bolts. To remedy this, TEDCO is now driving the drifts in this area with the ore in the lower portion of the drift cross-section and has reversed the previously described drift split-shooting procedure to recover the ore. This is not ideal however, and TEDCO is lowering the drifts' grades in an attempt to get under the ore again. Some of the ore in this area is 5 to 6 feet thick.


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